BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment	)	WC Docket No. 17-84
	)	
CTIA Petition for Declaratory Ruling	)	

To: The Commission

COMMENTS OF XCEL ENERGY SERVICES INC.

Xcel Energy Services Inc. ("Xcel Energy"), on behalf of its utility operating subsidiaries, hereby submits these Comments in response to the Federal Communications Commission's ("FCC" or "Commission") Public Notice requesting comment on the Petition for Declaratory Ruling filed by CTIA ("Petition").[1] Xcel Energy's comments exclusively concern pole attachment issues raised in CTIA's Petition and accordingly are being filed only in the above-referenced docket.[2] Specifically, Xcel Energy strongly urges the Commission to dismiss or deny CTIA's request for a declaratory ruling that would expand the scope of Section 224 of the

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[1] / *Wireless Telecommunications Bureau and Wireline Competition Bureau Seek Comment on WIA Petition for Rulemaking, WIA Petition for Declaratory Ruling and CTIA Petition for Declaratory Ruling*, Public Notice, WT Docket No. 19-250, WC Docket No. 17-84, RM-11849, DA 19-913 (rel. Sept. 13, 2019).

[2] / *See Implementation of State and Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012; Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Order Granting Extension of Time, WT Docket No. 19-250, RM-11849, WC Docket No. 17-84, DA 19-978 (rel. Sept. 30, 2019) ¶ 4 ("Filings that exclusively concern pole attachment issues should be filed in WC Docket No. 17-84 only.").

Communications Act of 1934 and the Commission's pole attachment rules to include utility-owned street light poles.[3]

The colocation of wireless facilities on street light poles involves a number of complex practical and logistical issues that can be most effectively and efficiently addressed through a voluntary, cooperative approach involving all stakeholders. As explained in these comments, programs such as the Small Cell Dual Use Street Light Pole program that Xcel Energy recently implemented in its service area foster innovation and cooperation that result in faster and more efficient deployment of 5G and other wireless infrastructure than could be achieved through regulation. The Commission must therefore refrain from taking any regulatory measures that would stifle such efforts by Xcel Energy and other utilities; instead, the Commission should encourage and incentivize these types of programs and partnerships, which provide the most effective way to accelerate the availability of 5G and other advanced wireless services to the public.[4]

I. INTRODUCTION

Xcel Energy Services Inc., through its public utility operating company affiliates, Northern States Power Company – Minnesota, Northern States Power Company – Wisconsin, Public Service Company of Colorado, and Southwestern Public Service Company (collectively, "Xcel Energy") provides a comprehensive portfolio of energy-related products and services to approximately 3,546,000 million electricity customers and approximately 2,013,000 natural gas customers in eight states – Colorado, Michigan, Minnesota, New Mexico, North Dakota, South

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[3] / *See* Petition at 21 – 25; *See also* 47 U.S.C. § 224; 47 C.F.R. §§ 1.1401 *et seq*.

[4] / Xcel Energy also agrees with and supports the arguments presented in the separate filing in this docket submitted jointly by the Edison Electric Institute ("EEI"), the Utilities Technology Council ("UTC"), and the National Rural Electric Cooperative Association ("NRECA") in opposition to the CTIA Petition.

Dakota, Texas and Wisconsin. Xcel Energy owns approximately 1,500,000 distribution poles that collectively support over 1,000,000 attachments by third-party communications providers.

In addition to its electric distribution operations, Xcel Energy also provides street lighting service to municipalities and other entities in its service area (such as homeowners' associations or townhouse developments) pursuant to privately-negotiated agreements between the entity and Xcel Energy. Depending on the specific agreement, the street lights may be owned and maintained by Xcel Energy or they may be owned and maintained by the customer (in which case Xcel Energy simply supplies electricity). Where Xcel Energy owns the street lights, each street light is installed at the request of the customer, and it is the customer who determines the specific type of street light or street light pole to be installed at any particular location in order to meet the customer's requirements regarding lighting, area aesthetics, and so forth.

In late 2016 and early 2017, Xcel Energy made the decision to allow wireless service providers to colocate on the company's street light poles and began working in consultation with wireless service providers and municipalities to develop a program and process to make this happen. In May 2018, Xcel Energy launched its Small Cell Dual Use Street Light Pole program, which establishes a collaborative approval, design and construction process that will allow wireless providers to efficiently deploy small cell infrastructure while addressing municipalities' concerns about infrastructure clutter in the public rights-of-way and the physical and visual impact of small cell deployment on their communities. Although much of the initial activity in this program has been in Xcel Energy's Colorado service area in response to the wireless industry's focus on the Colorado market (particularly the Denver metropolitan area), the program was designed and implemented to apply system-wide to Xcel Energy's entire multi-state service area.

Xcel Energy's Small Cell Dual Use Street Light Pole program is described in more detail below in Section III of these comments. In addition, a copy of an information sheet that Xcel Energy has prepared for local governments is attached as Exhibit A to these comments.

II. STREET LIGHT POLES ARE SIGNIFICANTLY DIFFERENT THAN UTILITY DISTRIBUTION POLES AND INVOLVE DIFFERENT PRACTICAL, LOGISTICAL AND OPERATIONAL ISSUES

The CTIA Petition ignores the significant differences between dedicated street light poles and electric utility distribution poles. From a legal perspective, these differences demonstrate that street light poles are outside the scope of the Commission's jurisdiction under Section 224 of the Act.[5] From a purely practical standpoint, these differences demonstrate that any effort by the Commission to regulate the terms and conditions of access to utility-owned street light poles would be nearly impossible to implement or administer and would unnecessarily complicate and delay – rather than facilitate – wireless deployment.

The Commission should therefore encourage, rather than stifle, voluntary collaboration among all stakeholders in order to promote the deployment of new wireless infrastructure.

A. A "Street Light Pole" is Not the Same as a Distribution Pole

The essential distinction between a street light pole and a distribution pole is found in the pole's primary purpose. The primary purpose of a distribution pole is to support electric distribution facilities. Accordingly, these poles are designed and engineered with sufficient strength to support aerial electric distribution lines and associated equipment, as well as aerial communications lines. In some cases, a street light mast arm may be attached to a distribution pole, as shown below in Figure 1. In such cases, however, the pole itself is still considered to be a distribution pole.

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5 / *See* Opposition of EEI, UTC and NRECA, WC Docket No. 17-84 (filed Oct. 29, 2019).

Figure 1: Street light attached to a distribution pole

In contrast, the primary purpose of a street light pole is to provide street lighting service. Unlike a distribution pole, a street light pole does not support electric distribution facilities, nor is it intended to.[6] Street light poles come in a wide array of heights, materials (including steel, fiberglass, wood, and composites) and configurations, and are often designed to meet certain visual and aesthetic requirements, such as in downtown commercial districts or in residential areas. Attached as Exhibit B to these comments are photographs of different street light poles that have been installed in Xcel Energy's service area. These photographs provide just a sample of the wide variety of street lights installed by Xcel Energy at the request of its street light customers.

[6] / Xcel Energy notes that street light poles are booked to a different FERC account than distribution poles, further demonstrating that they are not the same. Street light poles are booked to FERC account 373, whereas distribution poles are booked to FERC account 364.

Significantly, the vast majority of street light poles in Xcel Energy's service area do not have the structural capacity or capability to support wireless communications facilities. This means that in order to accommodate wireless colocation, the entire street light pole must be replaced with a new street light pole with expanded capacity. However, it is well-established that the Commission does not have the authority under Section 224 of the Act to require an electric utility to expand capacity in order to accommodate a communications attachment.[7] Accordingly, the most effective way for the Commission to promote the deployment of 5G and other wireless infrastructure is to incentivize and encourage voluntary, collaborative efforts between all stakeholders.

B. Street Light Poles Involve Different Practical, Logistical and Operational Considerations

In addition to the differences in purpose, design, engineering and physical characteristics described above, there are also a number of practical, logistical and operational considerations that increase the complexity of colocating wireless equipment on street light poles. First, as discussed above in these comments, Xcel Energy installs and maintains street light poles at the request of the customer (*e.g.*, a municipality or homeowners' association) pursuant to the terms of a privately-negotiated agreement between the parties. The customer – not Xcel Energy – determines the specific type of street light or street light pole to be installed at any particular location, and the customer must consent to the modification or replacement of any street light installed pursuant to the street light agreement. The decision of whether to allow the colocation of wireless equipment on a street light pole is therefore not within the sole discretion of Xcel Energy, even when Xcel Energy owns the street light pole in question.

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7 / *See Southern Co. v. FCC*, 293 F.3d 1338, 1346-47 (11th Cir. 2002).

In addition to the initial "yes/no" determination of whether to allow wireless colocation on a street light, the process of modifying and/or replacing the street light must be in accordance with the terms and requirements of Xcel Energy's individual agreement with the customer. To illustrate how complex this can be, consider that even though Xcel Energy owns approximately 95 percent of the street lights in its Colorado service area, it does so pursuant to 109 separate franchise agreements.

Another example of the increased complexity involved with street lights is the issue of power supply. Dedicated street light poles are generally fed by underground electric lines, and the existing feeder to the street light pole is generally rated to carry only the level of power necessary for the street light.[8] Colocating a small cell or other wireless equipment on a street light pole therefore also requires the installation of a new power run to the nearest available transformer, which – depending on the specific site – could potentially require excavation or even the installation of another transformer.

The replacement of a street light pole with a pole that is robust enough to accommodate wireless colocation also requires the installation of a new foundation capable of supporting the greater weight on the site, as well as providing the necessary protection from "knock-down" or other damage. Moreover, because street light poles are generally located along roads and sidewalks, a replacement street light pole (including the new foundation) must also comply with Americans with Disabilities Act restrictions on obstacles to pedestrians, as well as other applicable state or local safety requirements.

[8] / Some standalone street light poles may be fed by an overhead feeder line rather than an underground line. However, these overhead feeders are likewise generally rated to carry only the level of power necessary for the street light.

These are just some examples of the complexities and issues that must be taken into account when considering wireless colocation on street light poles. Together, they further demonstrate that the most effective way for the Commission to promote wireless deployment is to encourage and incentivize collaborative efforts to address these issues.

III. XCEL ENERGY'S PROGRAM TO FACILITATE WIRELESS COLOCATION ON COMPANY-OWNED STREET LIGHTS

As described above, the colocation of wireless facilities on street light poles involves a number of complex practical, logistical and operational issues. Xcel Energy's goal was to create an efficient system to address these issues in a way that would assist the wireless industry in "getting poles in the ground" as quickly as possible while ensuring that the needs and concerns of the communities and municipalities in its service area are met.

In May 2018, Xcel Energy launched its Small Cell Dual Use Street Light Pole program, which establishes a collaborative approval, design and construction process that enables wireless providers to efficiently deploy small cell infrastructure while addressing municipalities' concerns about infrastructure clutter in the public rights-of-way and the physical and visual impact of small cell deployment on their communities. Although still in its early stages, this program has already begun to accelerate the actual deployment of new small cell infrastructure for the provision of 5G and other advanced wireless services to the public, and the level of deployment is expected to accelerate still further as all of the stakeholders involved – Xcel Energy, the wireless providers, the participating contractors and manufacturers, and the municipalities themselves – gain experience and familiarity with the process and with each other.

Xcel Energy provides below a brief overview of its Small Cell Dual Use Street Light Pole program. In addition, attached as Exhibit C is a printout of an interview posted on the

Wireless Infrastructure Association ("WIA") website with Edward Bieging Jr., Project Manager of Xcel Energy's Small Cell Dual Use Street Light program.[9]

A. Background

As it became clear in 2016 that Denver was among the initial markets that the wireless industry planned to focus on for the deployment of new small cell infrastructure, wireless service providers began to approach Xcel Energy to discuss the possibility of colocating on company-owned street light poles. At the same time, the wireless providers were also approaching municipalities in Xcel Energy's Colorado service area with requests to install stand-alone small cell poles in the public right-of-way. In late 2016 and early 2017, Xcel Energy made the decision to allow wireless providers to colocate on the company's street light poles and began working in consultation with the wireless providers and municipalities to develop a program and process to make this happen. The culmination of this process was the launch of Xcel Energy's Small Cell Dual Use Street Light Pole program in May 2018. Although initially driven by wireless industry demand in Colorado, Xcel Energy designed and implemented the program to apply system-wide to the company's entire multi-state service area.

Key elements of Xcel Energy's Small Cell Dual Use Street Light Pole program include:

- The establishment of a dedicated staff position to manage the program;
- Regular, ongoing meetings with the cities and municipalities in Xcel Energy's service area;
- Weekly meetings with the wireless service providers;
- The development – in close consultation with the wireless providers and municipalities – of two standard dual use street light poles (one for internally-

[9] / The WIA interview with Mr. Bieging is also available at https://wia.org/blog/xcel-energys-ed-bieging-on-how-utilities-can-help-accelerate-5g-network-buildouts/ (last visited Oct. 28, 2019).

mounted small cell equipment and one for externally-mounted small cell equipment); and

- The selection of a dedicated contractor for construction and pole installation.

Xcel Energy has agreements in place with the leading wireless carriers and small cell infrastructure providers for the deployment of small cells under this program, and the actual installation of small cell dual use street light poles under this program began in May 2019.

B. How the Small Cell Dual Use Street Light Pole Program Works

When a wireless provider identifies a site or sites where it would like to deploy a small cell dual use street light pole, the provider first must get approval from the local jurisdiction in the form of a letter of no objection. Once approval has been received, the provider uses Xcel Energy's tracking system to verify that the site or sites are available, after which Xcel Energy will perform a verification of ownership followed by a field assessment, which includes determining where to feed power to the site from if needed. Xcel Energy provides the results of this assessment to the wireless provider, and the provider will then determine on the basis of that assessment whether it wants to proceed. If so, the site goes into the design and construction planning process. Once this process is complete and all necessary construction permits have been issued by the local jurisdiction, a dedicated contractor carries out the installation of a new dual use street light pole fitted with the wireless provider's equipment. Currently, the estimated time from initial site review to construction is between four and a half and six months; however, this process is under constant review with an eye towards increasing efficiency and decreasing the overall time required.

The street light pole program is not limited to the replacement of existing street light poles, but can also be used in situations where a wireless provider wants a standalone pole in a location where the municipality also needs a new street light. Xcel Energy is also working with

developers and wireless providers to incorporate small cell dual use street lights into the plans for new developments.

As of October 2019, Xcel Energy had installed approximately 100 new small cell dual use street light poles in Colorado alone, and the company is working with service providers on over 1,200 additional colocation requests that are in various stages of approval, design and planning. Attached as Exhibit D are photographs of two installations that Xcel Energy has made in the City of Denver under the Small Cell Dual Use Street Light Pole program.

IV. THE COMMISSION SHOULD ENCOURAGE INNOVATION AND COLLABORATION, WHICH IS THE MOST EFFECTIVE WAY TO PROMOTE THE DEPLOYMENT OF WIRELESS INFRASTRUCTURE

Xcel Energy's Small Cell Dual Use Street Light Pole program has already proven very successful in accelerating the deployment of new wireless infrastructure, particularly where the demand for sites for small cell deployment is high. It should be noted, however, that Xcel Energy-owned street lights are simply one of many options available to wireless providers in the robust market for sites suitable for small cell deployment, which also includes towers, buildings, and an array of other privately or publicly owned structures. Moreover, in Colorado in particular, state law gives wireless providers substantial flexibility to construct their own standalone small cell poles in the public rights-of-way, thus further expanding the market of potential sites available for small cell deployment.[10]

It is also important to note that the development and implementation of the Small Cell Dual Use Street Light Pole program was a significant undertaking by Xcel Energy that required substantial effort and resources. This program came into being only because Xcel Energy was not saddled with regulatory mandates, but instead had the flexibility to develop and implement

[10] / *See* COL. REV. STAT. §§ 29-27-401 *et seq*. and 38-5.5-101 *et seq*. (2018).

creative and collaborative solutions for achieving faster and more efficient wireless deployment while ensuring that the legitimate needs and concerns of the communities and municipalities in its service area are met. Without this essential level of flexibility, there will be no opportunity for programs such as this to develop, and those that are in place – including Xcel Energy's own program – would become too burdensome to administer and would have to be significantly scaled back or ended altogether. As a result, the deployment of new wireless infrastructure would be delayed by regulatory intervention rather than accelerated, and this delayed deployment would come at a much greater cost to the industry and to the public.

Xcel Energy also emphasizes that the particular approach it has adopted with its Small Cell Dual Use Street Light program may not be appropriate for other electric utilities. This program was developed based on Xcel Energy's own specific circumstances, and other utilities must have the flexibility to develop an approach that best suits their own circumstances and local operating environment. In other words, Xcel Energy's program should be considered as an example of what is possible, but should not necessarily be treated as a model to be precisely emulated.

For these reasons, Xcel Energy strongly urges the Commission to refrain from taking any regulatory measures that would stifle efforts such as those undertaken by Xcel Energy and other utilities, and instead to encourage and incentivize these types of programs and partnerships, which provide the most effective way to accelerate the availability of 5G and other advanced wireless services to the public.

WHEREFORE, THE PREMISES CONSIDERED, Xcel Energy Services respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

XCEL ENERGY SERVICES INC.

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Counsel to Xcel Energy Services Inc.

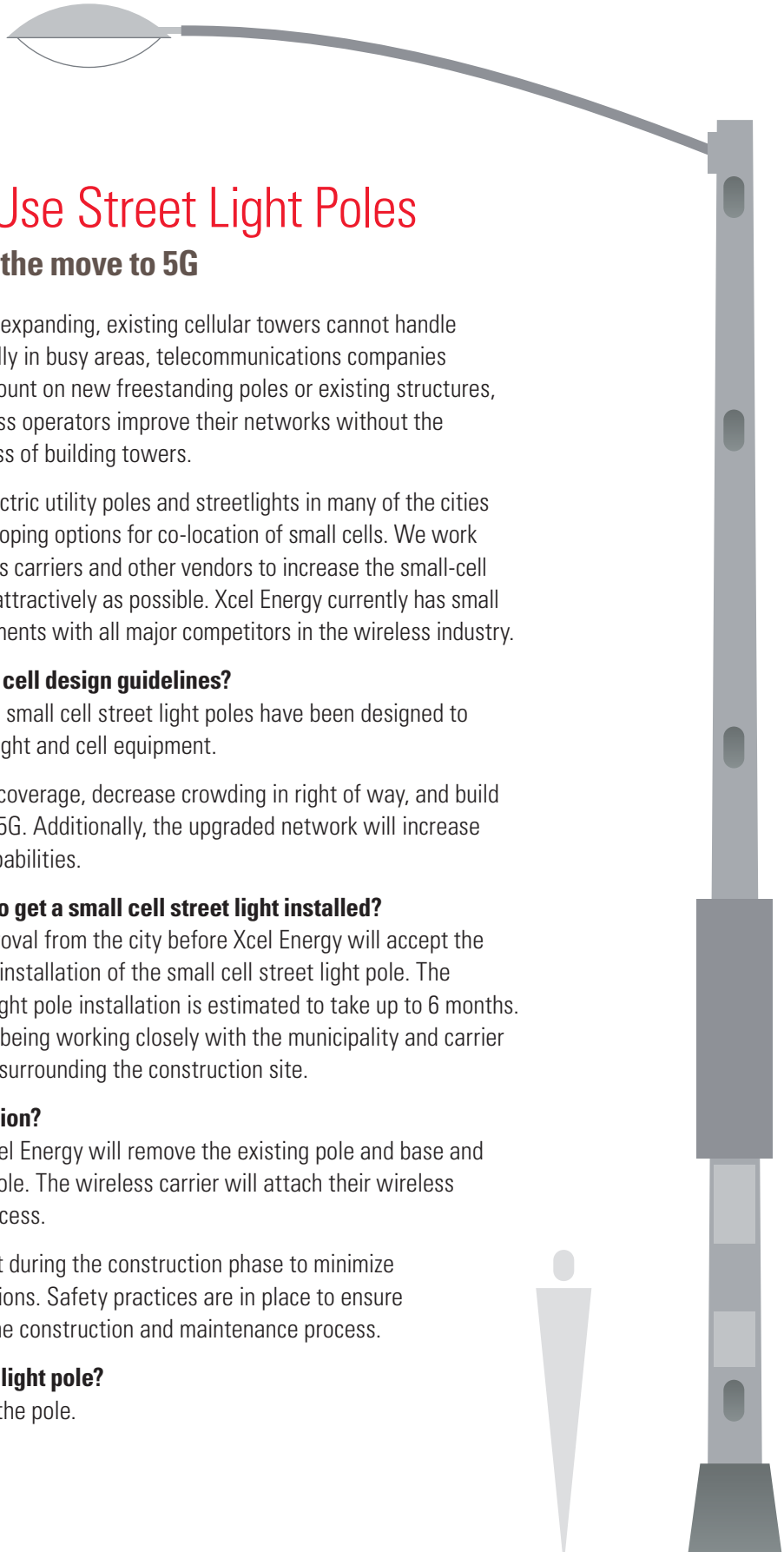
Dated: October 29, 2019

EXHIBIT A

Xcel Energy Information Sheet:

Small Cell Dual Use Street Light Poles – Helping Your City Make the Move to 5G

Xcel Energy®



Small Cell Dual Use Street Light Poles

Helping your city make the move to 5G

As demand for mobile data keeps expanding, existing cellular towers cannot handle the load. To add capacity, especially in busy areas, telecommunications companies are turning to "small cells" that mount on new freestanding poles or existing structures, like streetlights. This helps wireless operators improve their networks without the time-consuming, expensive process of building towers.

Because Xcel Energy owns the electric utility poles and streetlights in many of the cities and towns we serve, we are developing options for co-location of small cells. We work directly with communities, wireless carriers and other vendors to increase the small-cell network as safely, efficiently and attractively as possible. Xcel Energy currently has small cell street light attachment agreements with all major competitors in the wireless industry.

Why are you establishing small cell design guidelines?
In partnership with pole suppliers, small cell street light poles have been designed to safely accommodate both street light and cell equipment.

New poles will increase wireless coverage, decrease crowding in right of way, and build up the 4G network to prepare for 5G. Additionally, the upgraded network will increase public safety and enhance 911 capabilities.

What is the typical time frame to get a small cell street light installed?
The carrier must first get site approval from the city before Xcel Energy will accept the site for removal/replacement and installation of the small cell street light pole. The timeframe for a small cell street light pole installation is estimated to take up to 6 months. During that time, Xcel Energy will being working closely with the municipality and carrier to minimize disruption in the area surrounding the construction site.

What happens during construction?
During the construction phase, Xcel Energy will remove the existing pole and base and install a new small cell dual use pole. The wireless carrier will attach their wireless devices during the installation process.

Xcel Energy will make every effort during the construction phase to minimize traffic inconveniences and disruptions. Safety practices are in place to ensure a safe work environment during the construction and maintenance process.

Who owns the small cell street light pole?
Xcel Energy retains ownership of the pole.

Can there be more than one carrier on the pole?
Only one carrier will be allowed to attach to each of the small cell street light poles.

What happens in a pole knockdown situation?
Xcel Energy will follow the current knockdown process. The carrier will be responsible for their portion of the replacement small cell street light pole.

Will street light rates increase as a result of these installations?
No, rates will not change. Xcel Energy and carriers have agreements in place to ensure this.

Will there be any other impacts?
Streetlights will temporarily be out of service during light pole installations. Xcel Energy is working with municipalities to minimize time on site and impact to the surrounding area of construction.

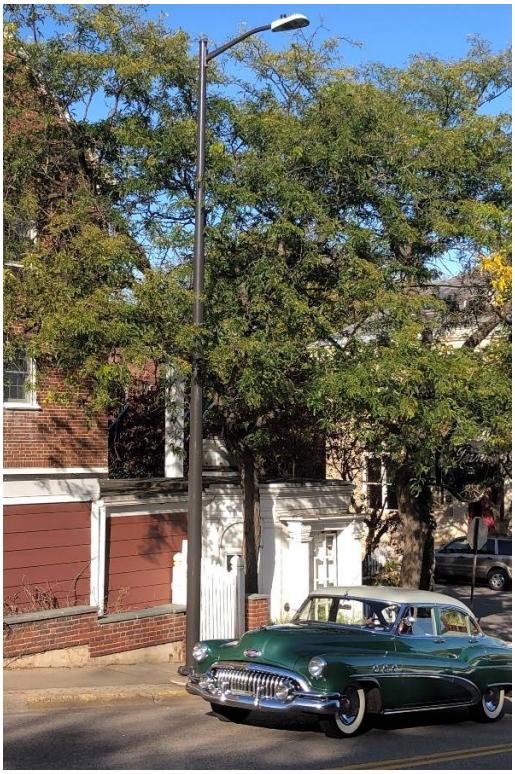
For questions, contact Ed Bieging at **edward.p.bieging-jr@xcelenergy.com**.

EXHIBIT B

Examples of Street Light Poles Installed in Xcel Energy's Service Area

15-foot Decorative Acorn Post Top Fluted Fiberglass Street Light Pole

15-foot Decorative Vernon Post Top Fluted Fiberglass Street Light Pole



30-foot Base Mounted Aluminum Street Light Pole

30-foot Direct Buried Fiberglass Street Light Pole

30-foot Steel and 15-foot Decorative Fiberglass Street Light Poles

Overhead-Feed Wood Standalone Street Light Pole

Wood Standalone Street Light Pole

EXHIBIT C

Kristen Beckman, "Xcel Energy's Ed Bieging on How Utilities Can Help Accelerate 5G Network Buildouts," Wireless Infrastructure Association (WIA) Blog, April 24, 2019

(https://wia.org/blog/xcel-energys-ed-bieging-on-how-utilities-can-help-accelerate-5g-network-buildouts/)

Xcel Energy's Ed Bieging on How Utilities Can Help Accelerate 5G Network Buildouts

From: Kristen Beckman / April 24, 2019 / Topics: 5G, Innovation, Small Cells, Wireless Infrastructure

Hundreds of thousands of new small cell sites are expected to be needed to support 5G and the revolutionary services it will enable — from connected vehicles to the internet of things. This densification effort will require close cooperation among wireless carriers, infrastructure providers and cities as network equipment reaches deeper into communities at a block-by-block level.

Utilities could become key facilitators in the coming wave of 5G wireless network buildout. Companies like Xcel Energy own thousands of assets – such as street lights — deployed in rights of way across the country that could be leveraged for small cell deployments. Xcel Energy recently launched a program to allow carriers to install small cells on its street light poles, including both existing and new sites, beginning primarily in Colorado where it owns 187,000 street lights. The company has developed an approval, design and construction process that will allow carriers to efficiently get small cell sites into operation while easing city concerns about infrastructure clutter in rights of way.

Interest in the program has been strong, according to Edward Bieging Jr., Project Manager for Small Cell Dual Use Pole Deployment for Xcel Energy. The company is working with service providers on more than 1,000 requests that are in various stages of approval and design, and it anticipates even more demand in the next year. Construction on the first site developed as part of its dual-use program is expected to begin soon, and once the process is streamlined, the company expects to deploy between three and five sites per week, Bieging said.

Bieging will discuss Xcel Energy's dual-pole program at Connectivity Expo on Wednesday, May 22, during a panel focused on innovative infrastructure solutions. In preview of that panel, Bieging sat down with WIA to discuss Xcel Energy's dual-use program and the role utilities can play in 5G deployments.

Xcel Energy offers a new option for 5G infrastructure deployment. How is the company helping to solve the 5G siting dilemma?

In late 2016 and early 2017, Xcel Energy made the decision to allow wireless carriers to use our street light asset sites for the deployment of Small Cell Dual Use Street Light poles and began to develop processes to make that happen. The goal was to create an efficient system that assists in getting poles in the ground as quickly as possible. We spent 2018 reviewing new site requests and developing and refining processes. As sites moved through the process and we gained a better understanding of carrier expectations, we have developed pole manufacturer relationships, proactively ordered pole and foundation equipment, and have had many conversations with city officials.

What is the process for a carrier to request a dual-use site with Xcel Energy?

The first step is to enter into a street light attachment agreement with Xcel Energy. Then the carrier must get approval in the form of a letter of no objection from the jurisdiction for the site or sites they want to use for their deployment. Once approval has been given, the carrier then submits a preliminary request in our tracking system. After that, we perform a verification of ownership followed by a field assessment, during which we locate underground facilities and analyze the site for specific criteria, such as Americans with Disabilities Act restrictions and speed limits, to make sure the site is suitable for a dual-use deployment.

Once field assessment is completed, a field report is created that provides Xcel Energy and the carrier important information, including where to feed power to the small cell if needed. The power location identification shortens the design process and land survey which is required to determine if the power design is in the right of way.

Can carriers choose both existing sites and new locations?

We've actually made the decision to go forward with new build as well, so if a carrier wants a standalone pole at a certain corner where the city also needs a new streetlight, we are open to installing a brand new dual-site pole at that location. If a carrier chooses an existing street light location, we will remove the existing base and pole and put in a brand-new base and pole because the base needed to support new small cell sites is too large for the existing equipment. We will hook up the street light and the carrier will run their power to the pole to light up the small cell device.

What kind of poles do you offer for small cell deployments?

We have two standard poles — internal- and external-mounted small cell street light poles. We wanted to make sure we are consistent with a standard pole because cities don't want multiple pole types within a right of way.

How does having a dual-pole site option benefit wireless service providers?

Time to on-network is the main focus of our Small Cell Dual Use Street Light pole installation process. We know that they need and want to get ready for 5G and having an existing asset there is critical for the success of their small cell deployment.

What do carriers need to know about working with utility assets?

The actual removal and replacement of the poles should be pretty easy. It's the power run to feed that small cell that is going to be a concern. Where is the power going to be fed and how much is that going to cost? Is it just simple run underground to that area that you can directionally bore or plow and hook up to the transformer, or is the transformer full? Do we need to design another transformer or design a more robust transformer? If we have to go down that path, it might be a bit more time consuming. If we don't, it should be an easy installation.

What have you learned working with the City of Denver?

Like any city, they don't want clutter in the right of way. They want standards. They want equipment that is going to last. They want sites that are going to look good. They want the least amount of disruption to the residents and to the people in Downtown Denver and neighborhoods. They want to take opportunities as well. For example, if there's a request where there's a wood standalone pole, they want to know if there is an opportunity to underground overhead wire to make it more aesthetically pleasing to the neighborhood. I think it pleases cities to know that we are helping and assisting with those installations. There's going to be times when a monopole or a standalone pole is going to have to be installed because a carrier needs it, but I think everybody so far is working together, getting ordinances put together and understanding the process. Cities don't feel like they are all alone out in the small cell world. We are here to help them through that process.

How is Xcel Energy preparing for the future demand for sites?

New development could impact infrastructure and it's a great opportunity to bring Xcel Energy, carriers and developers together to work collaboratively on getting Small Cell Dual Use Street Lights deployed in new development with minimal impact to the residents. We're working with builder developers and carriers to plan infrastructure during the development stage and get that stuff in the ground and the small cell network mapped out in that development prior to the ground being closed up. We need to be prepared for the demand and not stuck behind the eight ball, slowing things down. A good deployment strategy is the best way forward.

Don't miss Bieging's panel "Accelerating Small Cell Deployments with Innovative Infrastructure Solutions" at Connectivity Expo on Wednesday, May 22, at 1 p.m. Bieging will join panelists from Vitruvi, Aero Solutions and Peaknet to discuss how carriers, site development firms, software enablers and new entrants are deploying innovative solutions to meet the challenge of 5G deployment. The panel is a part of the "5G Infrastructure: Fiber, Small Cells and Fixed Wireless" education track, which will explore topics including network densification, artificial intelligence, Massive MIMO, millimeter wave wireless, mission critical fiber and small cell design.

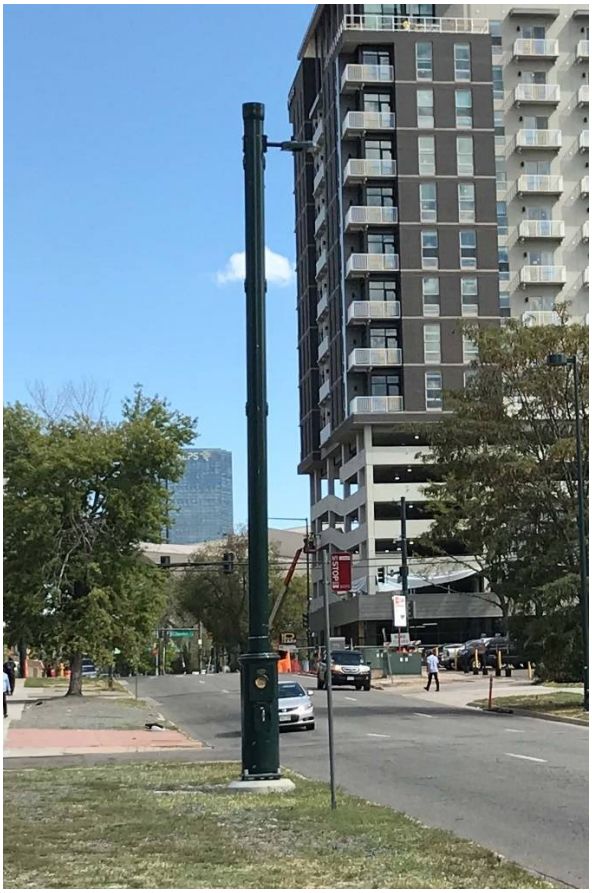
Visit www.connectivityexpo.com for the full list of speakers, keynotes, exhibitors and sessions.

Edward P. Bieging Jr. is a facility attachment consultant working for Xcel Energy on Small Cell Dual-Use Pole installations. He has 35 years of outdoor lighting and customer service experience and consults with cities and municipalities as well as carriers on small cell dual-pole use site requests, internal processes for design, and construction. Bieging has been instrumental in launching Xcel Energy's Small Cell Dual Use deployment in Colorado.

Previously, Bieging was LED Program Coordinator for Xcel Energy where he scheduled, coordinated and executed the company's LED conversion program.

EXHIBIT D

Xcel Energy Small Cell Dual Use
Street Light Pole Installations



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